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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,383	04/29/2005	Johannes Antonius Reinders	05589.0004.PC/US00	7064
32894	7590	03/14/2011		
HOYNG MONEGIER LLP Rembrandt Tower 31st Floor Amstelplein 1 Amsterdam, 1096 HA NETHERLANDS			EXAMINER FLANIGAN, ALLEN J	
			ART UNIT 3744	PAPER NUMBER
			NOTIFICATION DATE 03/14/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary**Application No.**

10/533,383

Applicant(s)REINDERS, JOHANNES
ANTONIUS**Examiner**

Allen J. Flanigan

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 10-14, 16-18 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) 13, 14, 16-18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-12, and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claims 13, 14, 16-18, and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention or species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/30/2008.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 4, 5, 10, 11, 21, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoya et al. in view of Higashiyama et al. and Okuda et al.

Heat exchangers are known which employ a braze-clad sheet to form a tube which is bonded to another sheet and/or any fins adjacent thereto by brazing (see Hosoya et al.'s discussion of the prior art, see also Higashiyama et al.). Hosoya et al. teach that certain advantages over this conventional assembly process can be obtained by employing sheets of aluminum material coated with a fusible resin that can be heated (such as in a furnace) to fuse the resin which acts similar to the braze clad to fuse the sheet members and fins together. Such aluminum members, coated with resin and then dried and cooled according to the teachings of Hosoya et al., read on the claimed "formable laminate of a metal layer and a polymer adhesive heat seal layer". The only limitations from claims 1 and 21 not found in Hosoya et al. are the claimed fins on both sides of a laminate, and the water retaining layer on one

set of fins. For the first limitation, it is known in the art as shown by Higashiyama et al. to provide corrugated fins on both sides (internal and external) of such laminated plate heat exchangers to provide enhanced surface area and other advantages for both passages of the exchanger. Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to include fins inside of the tubular elements of Hosoya et al. to increase surface area, strengthen the tube, etc. For the second limitation, Okuda et al. show a stamped plate, laminated heat exchanger design similar to Hosoya et al. in which the components (fins and tube element exteriors) are coated with a resin. The resin in Okuda et al. is a hydrophilic (water retaining) coating to facilitate condensate drainage when the device is used as a refrigerant evaporator. In view of this, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to either (a) employ a resin coating on the components of Hosoya et al. that was hydrophilic as well as fusible to allow it to impart the additional benefit of reducing the water contact angle for formed condensate, or (b) coat the fins and/or tube elements of Hosoya et al. with an additional hydrophilic resin coating after assembly to give it the improved property.

Regarding claims 23 and 24, the Examiner hereby takes Official Notice that the provision of louvers in heat exchanger fins of both the corrugated and flat plate type is of such notoriously well known character in the art that

citation of a reference to such effect is not considered necessary. See ***In re Malcolm*, 54 U.S.P.Q. 235.**

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoya et al. in view of Higashiyama et al. and Okuda et al. as applied to claim 21 above, and further in view of Lamich.

As noted previously, the selection of appropriate thickness for tube or sheet members constituting the separating walls of heat exchangers depending on the parameters of a given application would have been obvious. Routineers in the art understand that a thinner wall presents less of a barrier to heat conduction thereacross; however a wall that is too thin cannot withstand the pressures and structural forces acting upon it in use, is more susceptible to corrosion, etc. Lamich shows that it is known to provide heat exchanger elements with wall thicknesses on the order claimed, and it would have been obvious for one of ordinary skill in the art to make the walls of the aluminum tube elements of Hosoya et al. as modified above as thin as possible while remaining thick enough for structural demands.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoya et al. in view of Higashiyama et al. and Okuda et al. as applied to claim 21 above, and further in view of Tanno et al.

Okuda et al. shows a hydrophilic coating provided on both sides of a fin. Tanno et al. teach a heat exchanger usable as a refrigerant evaporator with fins provided on one side with a hydrophilic layer or coating, and on the other with

a water-repelling hydrophobic coating. The advantage is that where accumulating condensate freezes on the hydrophilic side, the lack of accumulation on the hydrophobic side will ensure a relatively unobstructed air passage until the frozen exchanger can be defrosted. In view of this, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to do the same for the fins of Hosoya et al. to make the exchanger less susceptible to ice clogging when used as an evaporator.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoya et al. in view of Higashiyama et al. and Okuda et al. as applied to claim 21 above, and further in view of Takai et al.

As noted previously, it is known in the art to form flat, tubular passages by folding a single sheet and seaming the edge rather than joining two paired sheet halves at the edges as shown in Takai et al., and it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to form the tubular elements of Hosoya et al. as modified above in this manner.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoya et al. in view of Higashiyama et al. and Okuda et al. as applied to claim 21 above, and further in view of Sakai et al.

Please see the comments made with regard to the teachings of Sakai in previous Office actions. To employ this known hydrophilic surface treatment

layer to the fins of the above-effected combination of references would have been obvious to one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen J. Flanigan/
Primary Examiner, Art Unit 3744